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PROGRAM TO CONVERT NAVIGATION AND BATHYMETRIC DATA ON TAPE INTO--ETC(U)

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Program to Convert Navigation and Bathymetric Data on Tape into Geodata Format

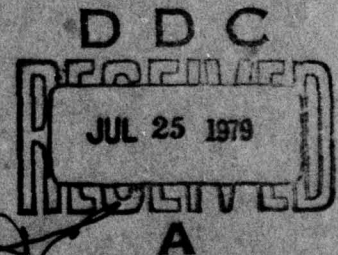
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Acoustics Division*

LEVEL

June 21, 1979

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) A program has been written to convert tapes containing navigation and bathymetric data into GEODATA formatted tapes. This enables the scientist to easily exchange data with other facilities and to use several programs using the GEODATA tapes for input. The program was written in Fortran IV for use on the CDC 3800; however the program can be converted to run on other systems with little difficulty.		

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**PROGRAM TO CONVERT NAVIGATION AND BATHYMETRIC
DATA ON TAPE INTO GEODATA FORMAT**

1.0 INTRODUCTION

1.1 Title

Program to convert navigation and bathymetric data on tape into GEODATA format.

1.2 Identification Name

CONBATH.

1.3 Classification Code

None.

1.4 NRL Research Computation Center Identification Number

None.

1.5 Entry Points

CONBATH.

1.6 Programming Language

Language: 3600/3800 Fortran.
Routine type: program.
Operating System: Drum Scope 2.1.

1.7 Computer and Configuration

CDC 3800.

1.8 Contributor or Programmer

Marilyn L. Blodgett, Code 8122MB, Applied Ocean Acoustics Branch, Acoustics Division, written for the Environmental Sciences Group, Acoustics Division.

1.9 Contributing Organization

NRL — Naval Research Laboratory, Washington, DC 20375.

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1.10 Program Availability

If supplied with a magnetic tape, the Environmental Sciences Group, Acoustics Division, will make a copy of this program available.

1.11 Verification

This program has been used and tested by the Environmental Sciences Group, Acoustics Division.

1.12 Date

April 1978.

2.0 PURPOSE

2.1 Description of the Routine

The program reads a data tape from an oceanographic or geophysical cruise and converts it into the GEODATA format. This is the format recommended by the National Research Council of the National Academy of Sciences with one slight modification for the navigational data. There is one logical record (of 80 characters) for each data point.

For navigation the program converts the Julian day to month and day and converts the latitude and longitude degree-and-minute values into their decimal equivalents.

For bathymetry the Julian day is converted into month and day, the minutes and seconds are combined into their decimal equivalents, depth in uncorrected meters is converted to uncorrected fathoms, and corrected depth in meters is calculated using the Matthews' table coefficients.

The converted data for both types of data is written on to a new tape and/or printed out on the standard printer (logical unit 61).

2.2 Problem Background

A program was needed to convert the navigation and bathymetric data into GEODATA formatted tapes, so that the data collected could be easily exchanged with other facilities and so that the scientist could use several other programs using GEODATA tapes for input.

3.0 USAGE

3.1 Calling Sequence or Operational Procedure

Not applicable.

3.2 Arguments, Parameters, and/or Initial Conditions

Not applicable.

3.3 Space Required (Decimal and Octal)

3.3.1 Unique Storage:

2740 octal (1504 decimal) locations exclusive of system library functions.

3.3.2 Common Blocks:

None.

3.3.3 Temporary Storage:

None.

3.4 Messages and Instructions to the Operator

None.

3.5 Error Returns, Messages, and Codes

None.

3.6 Informative Messages to the User

None.

3.7 Input

The program has a Navigation Parameter card which supplies the information needed for the GEODATA format, the number of files of navigational data and the type of output desired. The Bathymetry Parameter card serves the same purpose for the bathymetric data. This is followed by a Matthews' Zone Values card (or cards).

The navigation and bathymetric data is read in via magnetic tape. The formats for both types of data are given in Appendix A. Appendix B is a complete description of the input setup.

BLODGETT

3.8 Output

The program will write a new tape in GEODATA format. Appendix C shows the GEODATA format for both navigation and bathymetry. There is also an option for listing the records on the standard printer (logical unit 61). Appendix D presents sample output listings.

3.9 Formats

Appendix B, which shows the program deck structure, describes the formats.

3.10 External Routines and Symbols

ABSF, ENDFILE, MOD.

3.11 Timing

The time required depends on the length of the input tape.

3.12 Accuracy

Not applicable.

3.13 Caution to User

None.

3.14 Program Deck Structure

Appendix B describes the program deck structure.

3.15 References — Literature

M.L. Blodgett and J.V. Massingill, "A Program for Storing Oceanographic Data on Magnetic Tape," NRL Report 7861, Mar. 1975.

M.L. Blodgett and J.V. Massingill, "Program to Plot an Annotated Track or a Track and Bathymetry or Magnetic Profile on a Mercator Projection," NRL Report 7930, Feb. 1976.

L. LaLumiere, "Program OCEANO" (not published).

4.0 METHOD OR ALGORITHM

Not applicable.

5.0 FLOW CHART AND/OR SOURCE LANGUAGE LISTING

The flow chart is given in Appendix E, and the listing is given in Appendix F.

6.0 COMPARISON

There are no other known programs available for comparison.

7.0 TEST METHODS AND RESULTS

Samples of the GEODATA format for both navigation and bathymetry are given in Appendix C. Sample output listings are given in Appendix D.

8.0 REMARKS

Program CONBATH, in order to convert the bathymetric data into the GEODATA format, requires the different Matthews' zones the ship passed through. One method to obtain this information is as follows:

- Run Program CONVNAV to convert the navigational data into GEODATA format.
- Using the GEODATA formatted tape, plot the navigational data with every fifth fix annotated on a Mercator projection.
 - Use Program OCEANO (see references) with a scale of 0.3966.
 - Use Program MERCATOR (NRL Report 7930, see references) if the required heights can be measured from an already existing chart.

Appendix A

SAMPLE INPUT DATA FORMATS

BATHYMETRY

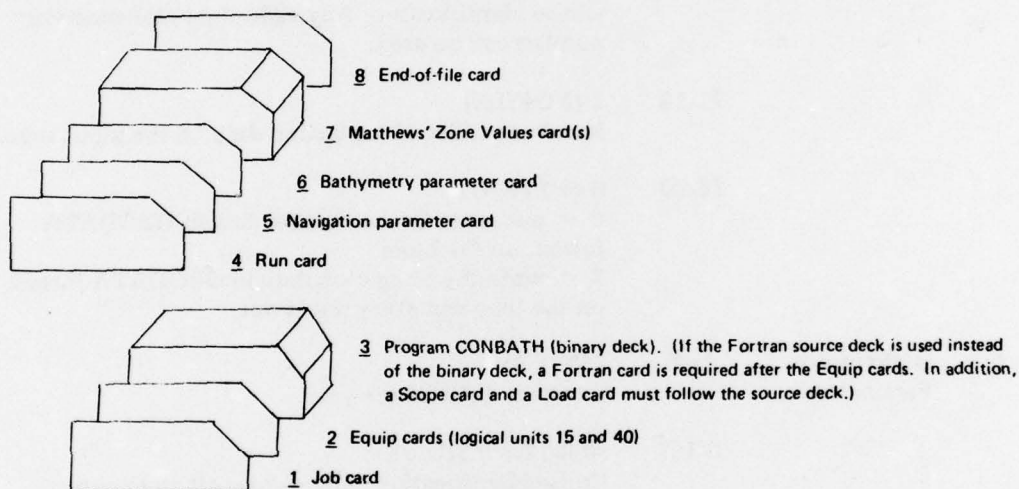
Julian day	Hour	Minutes	Seconds	Latitude: N = +, S = -	Longitude: W = -, E = +	Depth in uncorrected meters
24019	43	4		64.3961	-23.0032	101.
00 00 00	00 00 00	00 00 00	00 00 00	00 00 00	00 00 00	00 00 00
1 1 1 1	1 1 1 1	1 1 1 1	1 1 1 1	1 1 1 1	1 1 1 1	1 1 1 1
2 2 2 2	2 2 2 2	2 2 2 2	2 2 2 2	2 2 2 2	2 2 2 2	2 2 2 2
3 3 3 3	3 3 3 3	3 3 3 3	3 3 3 3	3 3 3 3	3 3 3 3	3 3 3 3
4 4 4 4	4 4 4 4	4 4 4 4	4 4 4 4	4 4 4 4	4 4 4 4	4 4 4 4
5 5 5 5	5 5 5 5	5 5 5 5	5 5 5 5	5 5 5 5	5 5 5 5	5 5 5 5
6 6 6 6	6 6 6 6	6 6 6 6	6 6 6 6	6 6 6 6	6 6 6 6	6 6 6 6
7 7 7 7	7 7 7 7	7 7 7 7	7 7 7 7	7 7 7 7	7 7 7 7	7 7 7 7
8 8 8 8	8 8 8 8	8 8 8 8	8 8 8 8	8 8 8 8	8 8 8 8	8 8 8 8
9 9 9 9	9 9 9 9	9 9 9 9	9 9 9 9	9 9 9 9	9 9 9 9	9 9 9 9

NAVIGATION

Julian day	Hour	Minutes	Latitude in degrees	Latitude in minutes; n = +, S = -	Longitude in degrees	Longitude in minutes; W = -, E = +	Fix description	Fix number
24019	43	4	55	13.00	-109	40.00	50	204
00 00 00	00 00 00	00 00 00	00 00 00	00 00 00	00 00 00	00 00 00	00 00 00	00 00 00
1 1 1 1	1 1 1 1	1 1 1 1	1 1 1 1	1 1 1 1	1 1 1 1	1 1 1 1	1 1 1 1	1 1 1 1
2 2 2 2	2 2 2 2	2 2 2 2	2 2 2 2	2 2 2 2	2 2 2 2	2 2 2 2	2 2 2 2	2 2 2 2
3 3 3 3	3 3 3 3	3 3 3 3	3 3 3 3	3 3 3 3	3 3 3 3	3 3 3 3	3 3 3 3	3 3 3 3
4 4 4 4	4 4 4 4	4 4 4 4	4 4 4 4	4 4 4 4	4 4 4 4	4 4 4 4	4 4 4 4	4 4 4 4
5 5 5 5	5 5 5 5	5 5 5 5	5 5 5 5	5 5 5 5	5 5 5 5	5 5 5 5	5 5 5 5	5 5 5 5
6 6 6 6	6 6 6 6	6 6 6 6	6 6 6 6	6 6 6 6	6 6 6 6	6 6 6 6	6 6 6 6	6 6 6 6
7 7 7 7	7 7 7 7	7 7 7 7	7 7 7 7	7 7 7 7	7 7 7 7	7 7 7 7	7 7 7 7	7 7 7 7
8 8 8 8	8 8 8 8	8 8 8 8	8 8 8 8	8 8 8 8	8 8 8 8	8 8 8 8	8 8 8 8	8 8 8 8
9 9 9 9	9 9 9 9	9 9 9 9	9 9 9 9	9 9 9 9	9 9 9 9	9 9 9 9	9 9 9 9	9 9 9 9

Appendix B

DECK ASSEMBLY



<u>Number</u>	<u>Card Title</u>	<u>Column Number</u>	<u>Description</u>
1	Job	1-21	7/9 JOB, Charge No., ID No., time. See page 2-2 of the 3600/3800 Computer System Drum Scope Manual.
2	Equip	1-18	7/9 EQUIP, 15 = **, RO, HI 7/9 EQUIP, 40 = **, WO, HI 15, 40 = logical unit number; RO = read only; WO = write only; HI = high density.
3	Program	Deck of CONBATH	This is the main program and associated subroutines in binary form.
4	Run	1-13	7/9 RUN, T, P, R, M, D T = time limit in minutes; P = maximum number of print or write operations; R, M, and D may be left blank. See page 2-15 of the 3600/3800 Computer System Drum Scope Manual.

BLODGETT

<u>Number</u>	<u>Card Title</u>	<u>Column Number</u>	<u>Description</u>
5	Navigation Parameter	1+2	75 (IYEAR) Last two digits of the year.
		3-10	A64-17-8 (CRUISE) Cruise identification. Any eight-digit alphanumeric number can be used.
		11-15	1 (NOFILE) Number of files of navigation data on the input tape.
		16-20	0 or 1 (IOUT) 0 = just write the navigation data in GEODATA format on the tape; 1 = write the navigation data in GEODATA format on the tape and also print it out.
6	Bathymetry Parameter	1+2	75 (IYR) Last two digits of the year.
		3-10	A64-17-8 (CRUISE) Cruise identification. Any eight-digit alphanumeric number can be used.
		11-15	1 (NOFILE) Number of files of bathymetric data on the input tape.
		16-20	8 (NOMZ) Number of Matthews' zone changes during the ship cruise.
		21-25	0 or 1 (IOUT) 0 = just write the bathymetric data in GEODATA format on the tape; 1 = write the bathymetric data in GEODATA format on the tape and also print it out.
7	Matthews' Zone Values	2-5	0705 (ITIME (1)) Time before or when the first data point was taken. The first two digits (CC 2+3) specify the hour and the last two digits (CC 4+5) specify the minutes.
		8-10	262 (JUL (1)) Julian day when the first data point was taken.

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<u>Number</u>	<u>Card Title</u>	<u>Column Number</u>	<u>Description</u>
14+15	2 (MZ(1))		Matthews' zone the ship was in when the first data point was taken.
17-20	1215 (ITIME (2))		Time when the ship passed into a different Matthews' zone.
23-25	262 (JUL (2))		Julian day when the ship passed into a different Matthews' zone.
29+30	3 (MZ (2))		New Matthews' zone.
32-35	1956 (ITIME (3))		Time when the ship passed into a different Matthews' zone.
38-40	263 (JUL (3))		Julian day when the ship passed into this Matthews' zone.
44+45	4 (MZ (3))		New Matthews' zone.
47-50	1000		Time when the ship passed into a different Matthews' zone.
53-55	264		Julian day when the ship passed into this Matthews' zone.
59+60	3		New Matthews' zone.
62-65	1300		Time when the ship passed into a different Matthews' zone.
68-70	264		Julian day when the ship passed into this Matthews' zone.

BLODGETT

<u>Number</u>	<u>Card Title</u>	<u>Column Number</u>	<u>Description</u>
		74+75	2 New Matthews' zone. As many Matthews' Zone Value cards as required may be used. The number of change sets must equal columns 16-20 of the Bathymetry Parameter card. The last time, the Julian day and Matthews' zone stated must be on or after the time when the last datum was taken.
8	End-of-file		Terminates the run.

Appendix C SAMPLE GEODATA RECORDS

NAVIGATION									
Cruise number	Time zone	Year	Month	Day	Hour	Minute	Latitude	Longitude	Fix description
731602	073	822	11	300	72.8333	10.225350			204
000000	00000	00000	00000	00000	0000000000	0000000000	0000000000	0000000000	0000000000
1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12
11111	11111	11111	11111	11111	1111111111	1111111111	1111111111	1111111111	1111111111
222222	22222	2222	222	222	222222	2222222222	2222222222	2222222222	2222222222
333 333	333333	3 333	333	333	33333 3	3333 333	333333333	3333333333	3333333333
444444	444444	444444	444444	444444	444444444	444444444	444444444	444444444	444444444
555555	555555	555555	555555	555555	555555555	55555555	55555555	55555555	55555555
66666	666666	666666	666666	666666	666666666	666666666	666666666	666666666	666666666
77 7777	77777	77777	7777	7777	777777	77777777	77777777	77777777	77777777
888888	888888	888888	888888	888888	888888888	888888888	888888888	888888888	888888888
999555	99999	99999	99999	99999	999999999	999999999	999999999	999999999	999999999
1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12

BATHYMETRY									
Cruise number	Time zone	Year	Month	Day	Hour	Minute	Latitude	Longitude	Uncorrected fathoms
731602	073	822	11	500	75.4981	3.7653			20067
000000	00000	00000	00000	00000	0000000000	0000000000	0000000000	0000000000	0000000000
1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12
11111	11111	11111	11111	11111	1111111111	1111111111	1111111111	1111111111	1111111111
222222	22222	2222	222	222	222222	2222222222	2222222222	2222222222	2222222222
333 333	333333	3 333	333	333	333333	3333 333	333333333	333333333	333333333
444444	444444	444444	444444	444444	444444444	444444444	444444444	444444444	444444444
555555	555555	555555	555555	555555	555555555	555555555	555555555	555555555	555555555
66666	666666	666666	666666	666666	666666666	666666666	666666666	666666666	666666666
77 7777	77777	77777	7777	7777	777777	77777777	77777777	77777777	77777777
888888	888888	888888	888888	888888	888888888	888888888	888888888	888888888	888888888
999555	99999	99999	99999	99999	999999999	999999999	999999999	999999999	999999999
1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12

△ The symbol implies a decimal point.

Appendix D
SAMPLE OUTPUT LISTING

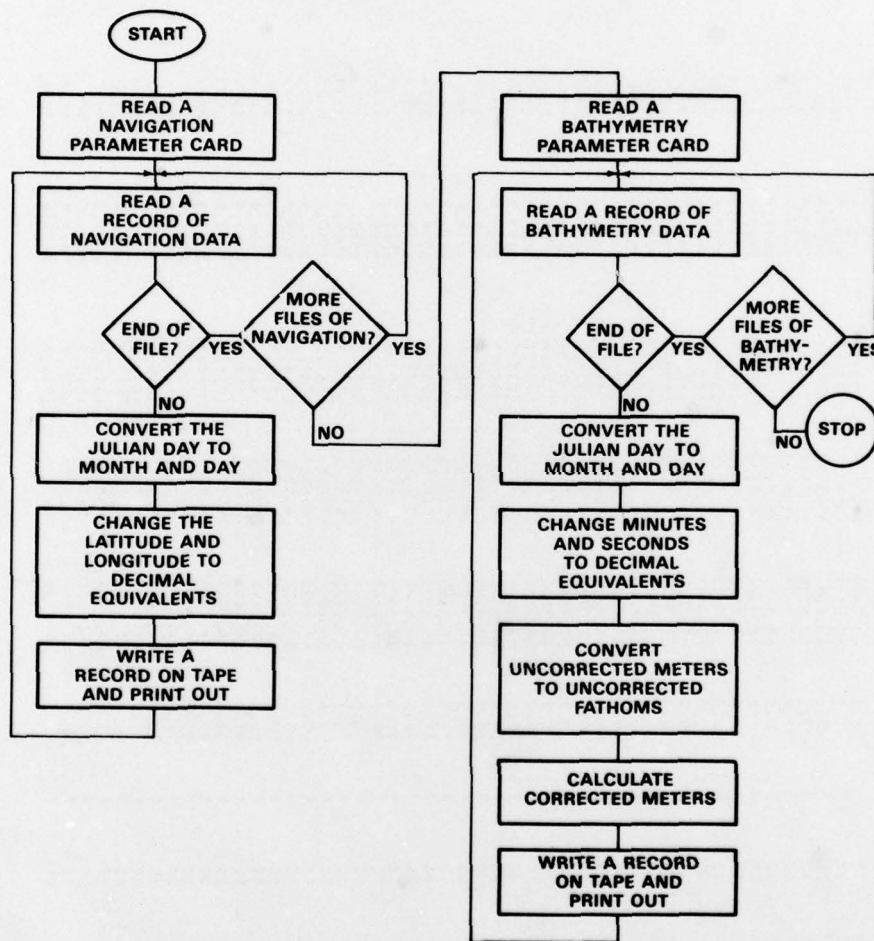
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SHIP NAME CRUISE IDENTIFICATION	YEAR	MONTH	DAY	HOURL	MINUTE	LATITUDE	LONGITUDE	FIX DESCRIPTION	FIX NUMBER
72-16-06	72	6	18	17	50.0	55.4000	-6.5847	10	1
72-16-06	72	6	18	18	0.0	55.6247	-6.6147	10	2
72-16-06	72	6	18	19	0.0	55.8433	-6.8147	9	3
72-16-06	72	6	18	20	0.0	56.0400	-7.0450	9	4
72-16-06	72	6	18	21	0.0	56.2500	-7.2500	9	5
72-16-06	72	6	18	22	0.0	56.4533	-7.4547	9	6
72-16-06	72	6	18	23	0.0	56.6667	-7.6667	10	7
72-16-06	72	6	18	0	0.0	56.9067	-7.9067	10	8
72-16-06	72	6	19	1	0.0	57.1500	-7.1500	9	9
72-16-06	72	6	19	2	0.0	57.3917	-7.3917	9	10
72-16-06	72	6	19	3	0.0	57.6317	-7.6317	9	11
72-16-06	72	6	19	4	0.0	57.8717	-7.8717	9	12
72-16-06	72	6	19	5	0.0	58.1150	-7.9617	9	13
72-16-06	72	6	19	6	30.0	58.2500	-7.9833	10	14
72-16-06	72	6	19	7	4.0	58.3818	-7.9193	10	15
72-16-06	72	6	19	8	34.0	58.4943	-7.8840	10	16
72-16-06	72	6	19	9	0.0	58.5950	-7.8450	10	17
72-16-06	72	6	19	10	0.0	58.6967	-7.7647	10	18
72-16-06	72	6	19	11	54.0	58.8300	-7.7633	10	19
72-16-06	72	6	19	12	0.0	58.9667	-7.7317	10	20
72-16-06	72	6	19	13	17.0	59.1000	-7.6653	10	21
72-16-06	72	6	19	14	0.0	59.2383	-7.6258	10	22
72-16-06	72	6	19	15	40.0	59.3818	-7.5933	10	23
72-16-06	72	6	19	16	0.0	59.5250	-7.5748	10	24
72-16-06	72	6	19	17	8.0	59.6667	-7.5158	10	25
72-16-06	72	6	19	18	0.0	59.8000	-7.5022	10	26
72-16-06	72	6	19	19	4.0	59.9333	-7.4328	10	27
72-16-06	72	6	19	20	48.0	59.9900	-7.3275	10	28
72-16-06	72	6	19	21	50.0	59.9932	-7.3275	10	29
72-16-06	72	6	19	22	0.0	60.0760	-7.2558	10	30
72-16-06	72	6	19	23	36.0	60.1800	-7.2147	10	31
72-16-06	72	6	19	24	0.0	60.2450	-7.1950	10	32
72-16-06	72	6	19	25	21.0	60.2983	-7.1298	10	33
72-16-06	72	6	19	26	30.0	60.3833	-7.0850	10	34
72-16-06	72	6	19	27	0.0	60.5000	-6.9533	10	35
72-16-06	72	6	19	28	22.0	60.6757	-6.8013	10	36
72-16-06	72	6	19	29	0.0	60.8133	-6.6803	10	37
72-16-06	72	6	19	30	0.0	60.9250	-6.5793	10	38
72-16-06	72	6	19	31	4.0	61.0200	-6.4630	10	39
72-16-06	72	6	19	32	0.0	61.1940	-6.3300	10	40
72-16-06	72	6	19	33	46.0	61.2500	-6.1973	10	41
72-16-06	72	6	19	34	0.0	61.4533	-6.0667	10	42
72-16-06	72	6	19	35	0.0	61.6817	-5.9333	10	43
72-16-06	72	6	19	36	0.0	61.8067	-5.8013	10	44
72-16-06	72	6	19	37	34.0	61.9000	-5.6803	10	45
72-16-06	72	6	19	38	58.0	61.9867	-5.5653	10	46
72-16-06	72	6	19	39	22.0	62.1117	-5.4500	10	47
72-16-06	72	6	19	40	0.0	62.2450	-5.3333	10	48
72-16-06	72	6	19	41	16.0	62.3833	-5.2147	10	49
72-16-06	72	6	19	42	2.0	62.5250	-5.0993	10	50
72-16-06	72	6	19	43	0.0	62.6667	-4.9840	10	51
72-16-06	72	6	19	44	2.0	62.8000	-4.8687	10	52
72-16-06	72	6	19	45	40.0	62.9333	-4.7533	10	53
72-16-06	72	6	19	46	0.0	63.0667	-4.6380	10	54
72-16-06	72	6	19	47	30.0	63.2000	-4.5228	10	55
72-16-06	72	6	19	48	0.0	63.3333	-4.4075	10	56
72-16-06	72	6	19	49	0.0	63.4667	-4.2922	10	57
72-16-06	72	6	19	50	34.0	63.6000	-4.1769	10	58
72-16-06	72	6	19	51	0.0	63.7333	-4.0617	10	59
72-16-06	72	6	19	52	16.0	63.8667	-3.9464	10	60
72-16-06	72	6	19	53	42.0	64.0000	-3.8311	10	61
72-16-06	72	6	19	54	0.0	64.1333	-3.7158	10	62
72-16-06	72	6	19	55	0.0	64.2667	-3.6005	10	63
72-16-06	72	6	19	56	0.0	64.4000	-3.4852	10	64
72-16-06	72	6	19	57	0.0	64.5333	-3.3699	10	65
72-16-06	72	6	19	58	0.0	64.6667	-3.2546	10	66
72-16-06	72	6	19	59	0.0	64.8000	-3.1393	10	67
72-16-06	72	6	19	60	0.0	64.9333	-3.0240	10	68

NRL REPORT 8306

SHIP AND CRUISE IDENTIFICATION	TIME ZONE	YEAR	MONTH	DAY	HR	MINUTE	LATITUDE	LONGITUDE	UNCORRECTED LATITUDES	UNCORRECTED METERS	CORRECTED METERS	ATTITUDE
72-16-06	0	72	2	20	5	35.0	63.5839	-5.5659	107.3	207.9	221	2
72-16-06	0	72	2	20	5	40.0	63.5821	-5.5605	135.7	220.4	220	2
72-16-06	0	72	2	20	5	45.0	63.5807	-5.5556	157.6	220.4	220	2
72-16-06	0	72	2	20	5	50.0	63.5770	-5.5509	184.4	215.8	214	2
72-16-06	0	72	2	20	5	55.0	63.5744	-5.5463	214.7	214	214	2
72-16-06	0	72	2	20	6	0.0	63.5717	-5.5417	256.0	207.9	207	2
72-16-06	0	72	2	20	6	5.0	63.5690	-5.5371	300.0	207.9	207	2
72-16-06	0	72	2	20	6	10.0	63.5663	-5.5326	349.0	207.9	207	2
72-16-06	0	72	2	20	6	15.0	63.5636	-5.5281	400.0	207.9	207	2
72-16-06	0	72	2	20	6	20.0	63.5609	-5.5236	454.7	207.9	207	2
72-16-06	0	72	2	20	6	25.0	63.5582	-5.5191	509.7	207.9	207	2
72-16-06	0	72	2	20	6	30.0	63.5555	-5.5146	564.7	207.9	207	2
72-16-06	0	72	2	20	6	35.0	63.5528	-5.5101	619.7	207.9	207	2
72-16-06	0	72	2	20	6	40.0	63.5501	-5.5056	674.7	207.9	207	2
72-16-06	0	72	2	20	6	45.0	63.5474	-5.5011	729.7	207.9	207	2
72-16-06	0	72	2	20	6	50.0	63.5447	-5.4966	784.7	207.9	207	2
72-16-06	0	72	2	20	6	55.0	63.5420	-5.4921	839.7	207.9	207	2
72-16-06	0	72	2	20	7	0.0	63.5393	-5.4876	894.7	207.9	207	2
72-16-06	0	72	2	20	7	5.0	63.5366	-5.4831	949.7	207.9	207	2
72-16-06	0	72	2	20	7	10.0	63.5339	-5.4786	1004.7	207.9	207	2
72-16-06	0	72	2	20	7	15.0	63.5312	-5.4741	1059.7	207.9	207	2
72-16-06	0	72	2	20	7	20.0	63.5285	-5.4696	1114.7	207.9	207	2
72-16-06	0	72	2	20	7	25.0	63.5258	-5.4651	1169.7	207.9	207	2
72-16-06	0	72	2	20	7	30.0	63.5231	-5.4606	1224.7	207.9	207	2
72-16-06	0	72	2	20	7	35.0	63.5204	-5.4561	1279.7	207.9	207	2
72-16-06	0	72	2	20	7	40.0	63.5177	-5.4516	1334.7	207.9	207	2
72-16-06	0	72	2	20	7	45.0	63.5150	-5.4471	1389.7	207.9	207	2
72-16-06	0	72	2	20	7	50.0	63.5123	-5.4426	1444.7	207.9	207	2
72-16-06	0	72	2	20	8	0.0	63.5096	-5.4381	1499.7	207.9	207	2
72-16-06	0	72	2	20	8	5.0	63.5069	-5.4336	1554.7	207.9	207	2
72-16-06	0	72	2	20	8	10.0	63.5042	-5.4291	1609.7	207.9	207	2
72-16-06	0	72	2	20	8	15.0	63.5015	-5.4246	1664.7	207.9	207	2
72-16-06	0	72	2	20	8	20.0	63.4988	-5.4201	1719.7	207.9	207	2
72-16-06	0	72	2	20	8	25.0	63.4961	-5.4156	1774.7	207.9	207	2
72-16-06	0	72	2	20	8	30.0	63.4934	-5.4111	1829.7	207.9	207	2
72-16-06	0	72	2	20	8	35.0	63.4907	-5.4066	1884.7	207.9	207	2
72-16-06	0	72	2	20	8	40.0	63.4880	-5.4021	1939.7	207.9	207	2
72-16-06	0	72	2	20	8	45.0	63.4853	-5.3976	1994.7	207.9	207	2
72-16-06	0	72	2	20	8	50.0	63.4826	-5.3931	2049.7	207.9	207	2
72-16-06	0	72	2	20	9	0.0	63.4799	-5.3886	2104.7	207.9	207	2
72-16-06	0	72	2	20	9	5.0	63.4772	-5.3841	2159.7	207.9	207	2
72-16-06	0	72	2	20	9	10.0	63.4745	-5.3796	2214.7	207.9	207	2
72-16-06	0	72	2	20	9	15.0	63.4718	-5.3751	2269.7	207.9	207	2
72-16-06	0	72	2	20	9	20.0	63.4691	-5.3706	2324.7	207.9	207	2
72-16-06	0	72	2	20	9	25.0	63.4664	-5.3661	2379.7	207.9	207	2
72-16-06	0	72	2	20	9	30.0	63.4637	-5.3616	2434.7	207.9	207	2
72-16-06	0	72	2	20	9	35.0	63.4610	-5.3571	2489.7	207.9	207	2
72-16-06	0	72	2	20	9	40.0	63.4583	-5.3526	2544.7	207.9	207	2
72-16-06	0	72	2	20	9	45.0	63.4556	-5.3481	2599.7	207.9	207	2
72-16-06	0	72	2	20	9	50.0	63.4529	-5.3436	2654.7	207.9	207	2
72-16-06	0	72	2	20	9	55.0	63.4502	-5.3391	2709.7	207.9	207	2
72-16-06	0	72	2	20	9	0.0	63.4475	-5.3346	2764.7	207.9	207	2
72-16-06	0	72	2	20	9	5.0	63.4448	-5.3301	2819.7	207.9	207	2
72-16-06	0	72	2	20	9	10.0	63.4421	-5.3256	2874.7	207.9	207	2
72-16-06	0	72	2	20	9	15.0	63.4394	-5.3211	2929.7	207.9	207	2
72-16-06	0	72	2	20	9	20.0	63.4367	-5.3166	2984.7	207.9	207	2
72-16-06	0	72	2	20	9	25.0	63.4340	-5.3121	3039.7	207.9	207	2
72-16-06	0	72	2	20	9	30.0	63.4313	-5.3076	3094.7	207.9	207	2
72-16-06	0	72	2	20	9	35.0	63.4286	-5.3031	3149.7	207.9	207	2
72-16-06	0	72	2	20	9	40.0	63.4259	-5.2986	3204.7	207.9	207	2
72-16-06	0	72	2	20	9	45.0	63.4232	-5.2941	3259.7	207.9	207	2
72-16-06	0	72	2	20	9	50.0	63.4205	-5.2896	3314.7	207.9	207	2
72-16-06	0	72	2	20	9	55.0	63.4178	-5.2851	3369.7	207.9	207	2
72-16-06	0	72	2	20	9	0.0	63.4151	-5.2806	3424.7	207.9	207	2
72-16-06	0	72	2	20	9	5.0	63.4124	-5.2761	3479.7	207.9	207	2
72-16-06	0	72	2	20	9	10.0	63.4097	-5.2716	3534.7	207.9	207	2
72-16-06	0	72	2	20	9	15.0	63.4070	-5.2671	3589.7	207.9	207	2
72-16-06	0	72	2	20	9	20.0	63.4043	-5.2626	3644.7	207.9	207	2
72-16-06	0	72	2	20	9	25.0	63.4016	-5.2581	3699.7	207.9	207	2
72-16-06	0	72	2	20	9	30.0	63.3989	-5.2536	3754.7	207.9	207	2
72-16-06	0	72	2	20	9	35.0	63.3962	-5.2491	3809.7	207.9	207	2
72-16-06	0	72	2	20	9	40.0	63.3935	-5.2446	3864.7	207.9	207	2
72-16-06	0	72	2	20	9	45.0	63.3908	-5.2401	3919.7	207.9	207	2
72-16-06	0	72	2	20	9	50.0	63.3881	-5.2356	3974.7	207.9	207	2
72-16-06	0	72	2	20	9	55.0	63.3854	-5.2311	4029.7	207.9	207	2
72-16-06	0	72	2	20	9	0.0	63.3827	-5.2266	4084.7	207.9	207	2
72-16-06	0	72	2	20	9	5.0	63.3800	-5.2221	4139.7	207.9	207	2
72-16-06	0	72	2	20	9	10.0	63.3773	-5.2176	4194.7	207.9	207	2
72-16-06	0	72	2	20	9	15.0	63.3746	-5.2131	4249.7	207.9	207	2
72-16-06	0	72	2	20	9	20.0	63.3719	-5.2086	4304.7	207.9	207	2
72-16-06	0	72	2	20	9	25.0	63.3692	-5.2041	4359.7	207.9	207	2
72-16-06	0	72	2	20	9	30.0	63.3665	-5.1996	4414.7	207.9	207	2
72-16-06	0	72	2	20	9	35.0	63.3638	-5.1951	4469.7	207.9	207	2
72-16-06	0	72	2	20	9	40.0	63.3611	-5.1906	4524.7	207.9	207	2
72-16-06	0	72	2	20	9	45.0	63.3584	-5.1861	4579.7	207.9	207	2
72-16-06	0	72	2	20	9	50.0	63.3557	-5.1816	4634.7	207.9	207	2
72-16-06	0	72	2	20	9	55.0	63.3530	-5.1771	4689.7	207.9	207	2
72-16-06	0	72	2	20	9	0.0	63.3503	-5.1726	4744.7	207.9	207	2
72-16-06	0	72	2	20	9	5.0	63.3476	-5.1681	4799.7	207.9	207	2
72-16-06	0	72	2	20	9	10.0	63.3449	-5.1636	4854.7	207.9	207	2
72-16-06	0	72	2	20	9	15.0	63.3422	-5.1591	4909.7	207.9	207	2
72-16-06	0	72	2	20	9	20.0	63.3395	-5.1546	4964.7	207.9	207	2
72-16-06	0	72	2	20	9	25.0	63.3368	-5.1501	5019.7	207.9	207	2
72-16-06	0	72	2	20	9	30.0	63.3341	-5.1456	5074.7	207.9	207	2
72-16-06	0	72	2	20	9	35.0	63.3314	-5.1411	5129.7	207.9	207	2
72-16-06	0	72	2	20	9	40.0	63.3287	-5.1366	5184.7	207.9	207	2
72-16-06	0	72	2	20	9	45.0	63.3260	-5.1321	5239.7	207.9	207	2
72-16-06	0	72	2	20	9	50.0	63.3233	-5.1276	5294.7	207.9	207	2
72-16-06	0	72	2	20	9	55.0	63.3206	-5.1231	5349.7	207.9	207	2
72-16-06	0	72	2	20	9	0.0	63.3179	-5.1186	5404.7	207.9	207	2
72-16-06	0	72	2	20	9	5.0	63.3152	-5.1141	5459.7	207.9	207	2
72-16-06	0	72	2	20	9	10.0	63.3125	-5.1096	5514.7	207.9	207	2
72-16-06	0	72	2	20	9	15.0	63.3098	-5.1051	5569.7	207.9	207	2
72-16-06	0	72	2	20	9	20.0	63.3071	-5.				

Appendix E



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BLODGETT

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116  FERMAT(1H ,2XA8,7X15,7X12,7X12,7X12,7XF2,7XF4,1,6XF8,4,5XF9,4,9X12
    1,10X15)
    NCM=NUM + 1
    GE TO 300
444  IEEF = 0
    GE TO 300
302  ICNT=ICNT + 1
    IF(ICNT,EQ,NCFILF) GE TO 700
    GE TO 300
700  ENDFILF 40
    CALL BATHY(ITMZNE)
    STOP
    END
  
```

PROGRAM LENGTH		00447	IDENT	CONVBATH
ENTRY POINTS	CONVBATH	00135		
BLOCK NAMES				
	IOERR	00001		
EXTERNAL SYMBOLS				

OBCENTRY
 THEAD.
 OBCSTOPS
 OBCICT.
 FUDGE
 JULIAN
 BATHY
 XMOEF
 OBCIFE0F
 OBCIF10C
 EFT.
 TSH.
 STH.
 ONSINGL.

00125 SYMBOLS

C	SLROUTINE JULIAN (IY,JUDY,IC,IM,LFYR)	F	1
C	INVERTS JULIAN DATE INTO DAY, MONTH, YEAR FOR ANNOTATION IN OCFANG	F	2
C	IY = YEAR, JUDY = JULIAN DAY, IC = CALENDER DAY, IM = CALENDER MON	F	3
C	COMPLIMENTS OF ROB FEEN - CODE 8174 - 17 NOV 1971	F	4
C	MODIFIED BY LEON LA LUMIERE - CODE 8178 - 17 NOV 1971	F	5
C		F	6
	DIMENSION JJ(13), AA(12)	F	7
	TYPE INTEGER AA	F	8
	DATA (JJ(I), I = 1, 13) = 0, 31, 59, 90, 120, 151, 181, 212, 243,	F	9
	1273, 304, 334, 365)	F	10
	DATA ((AA(I), I = 1, 12) = 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12)	F	11
	LL=IY	F	12
	MM=JUDY	F	13
	IF (LL.LT,0) GE TO 10	F	14
	IF (LL.EQ,0) GE TO 1	F	15
	IF (MOD(LL,4).EQ,0) GE TO 4	F	16
1	IF (MM.LE,0,PR,MM,GT,365) GE TO 4	F	17
2	DO 3 K=2,13	F	18
	IF (MM.LE,JJ(K)) GE TO 6	F	19
3	CONTINUE	F	20

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5.4DS JULIAN

PROGRAM LENGTH	00301
ENTRY POINTS JULIAN	00053
EXTERNAL SYMBOLS	

00116 SYMBOLS

```
PROGRAM LENGTH      00023
ENTRY POINTS      FUDGE      00000
BLOCK NAMES
```

EXTERNAL SYMBOLS

ELC.
Q6GERSET

IDENT FUDGE

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19

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BLODGETT

00003	77	1	04C00	ENA	(-)FUDGE.1
	10	0	P00C17		
00004	50	1	0CC00	ENI	0.1
	50	0	00C00		
00005	63	0	10C17	SEYT,A0,E15	X,,1
	50	5	P00C14		
00006	50	1	0CC17	ENI	15.1
	12	0	P00C02	LCA	FUDGE+2
00007	63	0	14C03	SEYT,A32,E3	X,,1
	50	5	P00C14		
00010	12	0	P00C14	LCA	X
	20	0	X77777	STA	GROUPSET-2
00011	50	1	77777	RESTOF ENI	**.,1
	50	0	00C00		
00012	77	2	00C00	ELCA	X+1
	12	0	P00C15		
00013	75	0	P00C00	SLC	FUDGE
	50	0	00C00		
00014	63	0	00C00	X LCLP	**
	00	0	77777		
00015	00	0	00C00	ECT	0
	00	0	00C00		
00016	00	0	00C00	ECT	0
	00	0	00C00		
00017	77	2	00C00	FUDGE,1 LSTA	X+1
	20	0	P00C15		
00020	10	0	00C01	ENA	1
	20	0	C00000	STA	IMEF
00021	77	2	00C00	ELCA	X+1
	12	0	P00C15		
00022	63	0	00C00	LCLP	(%)FLU,+10
	01	0	X77777	END	

00007 SYMBOLS

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SLROUTINE BATHY(ITMZNF)
DIMENSION ITIME(40),JUL(40),M2(40)
NLM=1
ICNT=0
ITMZN=0
READ(60,100)IYR,CALISE,NFILE,NFMZ,IOUT
100 FERMAT(I2,AB,JIS)
READ(60,400)(TIME(I),JUL(I),P2(I),I=1,NOMZ)
400 FERMAT(1515,5X)
MAT=MZ(1)
I=2
300 READ(15,200)JLCY,F,XMIN,SFC,XLAT,XLON,UNCOR
200 FERMAT( I3,F2,PFS,4,F7.0)
IF(ICHECK,15)300,301
301 IF(EOF,15)302,303
C CONVERT JULIAN DAY TO MONTH AND DAY
303 IF((EOF.EQ.1) GO TO 444
CALL JLIAN(IYR,JLEY,ID,IM,LFYR)
C CHANGE MINUTES AND SECONDS TO DECIMAL EQUIVALENT
MINUS=400000000000CCCCC
SEC=A8SF(SEC)
KEY=XMIN.AND.MINUS
IF(KEY.EQ.MINUS)27,28

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27  CMLAT=XMIN-SEC/60.0
    GE TO 29
28  CMLAT=XMIN + SEC/60.0
C  CALCULATE CORRECTED METERS
29  DEPTH=UNCOR/1.8288
    ICLOCK=HR*100 + XMIN
    IDEPTH=DEPTH
    IF (JUDY,EQ,JUL(1),AND,ICLOCK,GE ,ITIME(1)) GO TO 600
    GE TO 602
600  MAT=MZ(1)
    I=I + 1
602  CALL MTCOR( DEPTH,MAT,KORFAT,KORMET,METUNC,MTDC)
    CMLAT=CMLAT+10
    MDEPTH=DEPTH * 10
    WRITE(40,605)CRUISE,ITMZNE,IYR,IM,ID,HR,CMLAT,XLAT,XLON,MDEPTH,
    1KORMET,MAT
605  FORMAT(A8,15,3I2,1XF2,F3,FF,4,F9,4,10X2I5,I2,16X)
    IF (ICUT,NE,1) GO TO 300
    ZMIN=CMLAT/10.0
    IF (MOD(NUM,60),NE,1) GO TO 700
    ALM=1
    WRITE(61,504)
    WRITE(61,505)
504  FORMAT(1H1,133HSHIP AND CRUISE   TIME   YEAR   MONTH   DAY   HOUR
    1 MINUTE   LATITUDE   LONGITUDE   UNCORRECTED   UNCORRECTED   CORR
    2ECTED   MATTHEWS)
505  FORMAT(1H ,22HIDENTIFICATION   ZONE,65X,44HFATHOMS   METERS
    1 METERS   ZONE)
700  WRITE(61,701)CRUISE,ITMZNE,IYR,IM,ID,HR,ZMIN,XLAT,XLON, DEPTH,
    1UNCOR,KORMET,MAT
701  FORMAT(1H ,2XAR,5X15,5X12,5X12,5X12,5XF2,5XF4,1,4XF8,4,3XF9,4,
    1 5XF6,1,8XF6,1,7X15,5X12)
    ALM=NUM + 1
    GE TO 300
302  ICNT=ICNT + 1
    IF (ICNT,EQ,NCFILE) GO TO 800
    GE TO 300
444  ICEF=0
    GE TO 300
800  ENDFILE 40
    REWIND 40
    REWIND 15
    RETURN
    END

```

PROGRAM LENGTH		00753	IDENT	BATHY
ENTRY POINTS	BATHY	00334		
EXTERNAL SYMBOLS	THEAD. Q1C10100 QHCCIY. JULIAN MTCOR XMBIF QHGFIFOF QHGFIFOC EET. REW. TSH. STF. QNSINGL.			

00150 SYMBOLS

BLODGETT

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C      SUBROUTINE MTCOR (IDEP,MT,KCDF,KCDM,METUNC,MTDC)      J  1
C      JAN 10, 1972      J  2
C      J  3
C      J  4
C      MODIFIED FOR CDC 3800 BY LEEA LA LLMIERE - CODE 8174 - 20 MAR 1972 J  5
C      J  6
C      SUBROUTINE MTCOR(ARG), MATTHEWS TABLE CORRECTION      J  7
C      VERSION WHERE COEFFICIENTS ENTERED AT RUN TIME      J  8
C      CALCULATES CORRECTED DEPTH IN METERS WHEN GIVEN      J  9
C      MATTHEWS TABLE COEFFICIENTS AND UNCORRECTED      J 10
C      DEPTH IN FATHOMS,      J 11
C      COPIED FROM W-01 PROGRAM FOR IBM 1130      J 12
C      J 13
C      INPUT,      J 14
C      IDEP = UNCORRECTED DEPTH IN FATHOMS      J 15
C      MT = MATTHEWS TABLE COEFFICIENT(1 - 52)      J 16
C      J 17
C      OUTPUT,      J 18
C      KCDF = CORRECTED DEPTH IN FATHOMS      J 19
C      KCDM = CORRECTED DEPTH IN METERS      J 20
C      MTDC = MATTHEWS TABLE DEPTH CORRECTION (METERS)      J 21
C      J 22
C      INTERNAL      J 23
C      NUDF WATER DEPTH UNCORRECTED FATHOMS      J 24
C      WUDF WATER DEPTH UNCORRECTED FATHOMS      J 25
C      WUDM WATER DEPTH UNCORRECTED METERS      J 26
C      WCOR CORRECTION IN METERS      J 27
C      J 28
C      SETTING MATTHEWS TABLE COEFFICIENTS SUPPLIED BY C. GANTAR      J 29
C      DIMENSION MTN(52),AMT(52),BMT(52),CMT(52),DMT(52),EMT(52),FMT(52) J 30
C      J 31
C      REAL IDEP
C      DATA (MTN=1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22 J 32
1,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44 J 33
2,45,46,47,48,49,50,51,52) J 34
C      DATA (AMT=-.05,.21,.19,.25,.35,.43,.12,-.21,.76,-.19,-.07,1.29,.34 J 35
1,-.04,.12,.39,1.18,1.25,-.11,.64,-.31,.43,-.29,-.06,-.110,-.08,-.2 J 36
23,.06,1.14,-.38,.2,-.56,.34,.58,1.15,.58,.01,.59,2.49,.97,3.93,1.9 J 37
36,-.15,.09,.06,.42,-.05,.03,-.41,-.19,-.01,.07) J 38
C      DATA (BMT=-.01683,-.00247,.006885,.000632,.015719,.004269,.013881, J 39
1.025565,.030789,.023035,.031673,.036491,.031972,.049788,.032253,.0 J 40
240042,.037533,.043541,.046531,.034097,.019659,.025093,.012063,.005 J 41
3833,-.000139,-.006374,-.00994,-.012026,-.019317,-.011231,.034103,. J 42
4037121,.037874,.03524,.031429,.037872,.043038,.0395,.025775,.03583 J 43
58,.021001,.0186,.021906,.013118,.001109,.044699,.02651,.028006,.03 J 44
65524,.03841,.049807,.000832) J 45
C      DATA (CMT=1.30695,-.028055,-.033416,.030785,-.169795,.049419,-.059 J 46
1931,-.156579,-.141286,.00879,-.101806,-.121871,-.040565,-.233986,. J 47
2011268,-.363995,-.227838,-.239633,-.383832,-.24561,-.044804,-.2165 J 48
309,-.014753,-.009209,.021746,.082109,.101101,.11845,.193882,.06327 J 49
48,-.255508,-.174712,-.196492,-.149662,-.141422,-.17812,-.210477,-. J 50
5103453,-.092957,-.142454,-.04741,-.02271,-.117873,-.039335,.023648 J 51
6,-.271705,-.041812,.048156,-.059269,-.097981,.001276,.161859) J 52
C      DATA (DMT=-.040587,.017161,-.00471,.012525,.115271,-.015992,.04609 J 53
14,.083656,.05727,-.01941,.036137,.039775,.004688,.083487,-.030352, J 54
2,207727,.102774,.095135,.187189,.123539,.02245,.119429,.008118,.02 J 55

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34232,,01811,-.013313,-.020412,-.030545,-.061797,-.001826,,121471,, J 56
4064336,,081801,,056314,,055151,,067,,083684,,020131,,037683,,09235 J 57
59,,018848,,00924,,06013,,023795,,007413,,103092,,167905,,004016,,0 J 58
670316,,097868,-.000464,-.142078) J 59
DATA (EMT=.092394,,048995,,127138,-.02266,-.249166,,06975,-.087349 J 60
1,-.154994,-.075775,,081004,-.035675,-.040077,,023167,-.115908,,107 J 61
256,-.470139,-.166568,-.137278,-.366057,-.235691,-.029841,-.232583, J 62
3,015918,-.046104,-.045777,,024588,,037058,,062662,,110085,,001486, J 63
4,-.214992,-.08685,-.138137,-.079156,-.07518,-.09377,-.136212,,01265 J 64
52,-.041351,-.186534,-.014159,,001108,-.09774,-.025662,-.004717,-.1 J 65
642748,-.983392,,000155,-.170839,-.2527,,24145,,983392) J 66
DATA (FMT=-.072171,-.156148,-.23102,,012058,,190978,-.076755,,0646 J 67
179,,109779,,038823,-.075341,,011294,,015287,-.027333,,062495,-.096 J 68
2216,,403122,,10073,,074903,,267798,,169277,,021495,,16502,-.028903 J 69
3,,035913,,040884,-.014177,-.022102,-.045831,-.06729,,001066,,14100 J 70
47,,04968,,094743,,048085,,039534,,050998,,089176,-.032552,,017001, J 71
5,140729,,003867,-.004373,,058355,,010515,,000162,,067775,2.003205, J 72
6,-.00155,,149654,,235294,-.623288,-2,003205) J 73
C J 74
NZERO=0 J 75
C J 76
NLDF=IDEP J 77
IF (NUDF) 3,5,1 J 78
1 IF (52-MT) 4,2,2 J 79
C J 80
2 WUDF=IDEP J 82
WUDM=WUDF*1.8288 J 83
WCOR=AMT(MT)+EMT(MT)*WUDM+CMT(MT)*1.E-04*(WUDM**2)*DMT(MT)*1.E-07* J 84
1(WUDM**3)+EMT(MT)*1.E-11*(WUDM**4)+FMT(MT)*1.E-15*(WUDM**5) J 85
WCDM=WUDM+WCOR J 86
KCDM=WCDM*0.5 J 87
MTDC=WCOR*0.5 J 88
KCDF=(WCDM*0.54681)*C,5 J 89
METUNC=WUDM J 90
RETURN J 91
C J 92
3 PRINT 6 J 93
GE TO 5 J 94
C J 95
4 PRINT 7 J 96
ERROR EXIT J 97
5 KCDM=NZERO J 98
MTDC=NZERO J 99
KCDF=NZERO J 100
RETURN J 101
C J 102
6 FORMAT (1X,'DEPTH READ IS NEGATIVE') J 103
7 FORMAT (1X,'MATTHEWS ZONE NUMBER IS GREATER THAN 52') J 104
END

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PROGRAM LENGTH 01015
ENTRY POINTS MTCOR 00577
EXTERNAL SYMBOLS
010100
THEND,
08001CT,
STH,
00074 SYMBOLS
LOAD

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